

REMARKS

Favorable reconsideration of this application, as amended, is respectfully requested.

Applicants acknowledge with appreciation the indication of allowable subject matter in Claims 38 and 39, Claims 28-30, and Claims 14-16, 21, and 22.

By this Amendment, independent Claims 1 and 24 have been amended according to Applicants' intent, *inter alia*, to add features from Claims 9 and 35, respectively. Claims 1, 7, 8, 10, 11, 19, 20, 22, 33, and 34 have been amended for clarity and/or for consistency. Claim 38 also has been amended for clarity. Claims 9, 35, and 39 have been cancelled without prejudice or disclaimer, with Applicants respectfully reserving the right to present Claim 39, for example, in a continuing application. Claims 17, 18, 23, 31, and 32 were previously cancelled. Accordingly, Claims 1-8, 10-16, 19-22, 24-30, 33, 34, and 36-38 are pending, with Claims 1, 24, and 38 being independent.

In amending Claim 1, the rejection under 35 U.S.C. § 112, first paragraph, has been appropriately addressed. Withdrawal of the rejection is therefore respectfully requested.

Turning to the merits, Claims 1-13, 19, and 20 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Vallomy* in view of *Innes*. Claim 20 also was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Vallomy* and *Innes*, further in view of *Dimitrov*. Claims 24-27, 33, and 35-37 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Vallomy*. Claim 34 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Vallomy*, further in view of *Dimitrov*.

Without acceding to the rejection, independent Claim 1 has been amended to recite that a process includes the steps of, *inter alia*, producing molten iron in a direct

smelting process in a direct smelting vessel containing a molten bath of iron and iron-making slag using a substantial portion of the steelmaking slag as part of the feed material requirements for the direct smelting process, and controlling the direct smelting process to smelt ferrous feed material and substantially partition phosphorus to the iron-making slag.

Similarly, independent Claim 24 has been amended, without acceding to the rejection, to recite a direct smelting process for producing molten iron in a direct smelting vessel containing a molten bath of iron and iron-making slag, the process including the steps of, *inter alia*, direct smelting molten iron in a direct smelting vessel containing a molten bath of iron and iron-making slag using the pre-treated ferrous feed material including steelmaking slag from step (a) as part of the feed material requirements for the direct smelting vessel, and controlling the direct smelting process to smelt the ferrous feed material and substantially partition phosphorus to the iron-making slag.

Vallomy, *Innes*, and *Dimitrov* are not seen to disclose or suggest the aforementioned claim features of Claims 1 and 24.

For example, *Vallomy* fails to disclose a direct smelting process whereby phosphorus is substantially partitioned to iron-making slag in a bath of iron and the iron-making slag. Rather, *Vallomy* discloses in Example 1, for instance, only that the outputted Treated Slag contains P_2O_3 at 0.41% (down from 0.5% in the Untreated Slag) and Molten Metal contains P (phosphorus) at 39 ppm. Such disclosures do not indicate that phosphorus is partitioned to any iron-making slag instead of being transferred to the Molten Metal.

Innes and *Dimitrov* are not seen to cure *Vallomy*'s deficiencies noted above. Nor have these references been applied for such purposes. Furthermore, *Innes*, for example, is not believed to be properly combinable with *Vallomy* to arrive at Applicants' claimed

invention, absent impermissible hindsight reasoning. *Vallomy* is directed to an iron smelting process and plant according to multiple zone smelting process, whereas *Innes* is directed to producing metals and metal alloys from metal oxides, such as ores and partly reduced ores, in a metallurgical vessel containing a molten bath.

In view of the foregoing, independent Claims 1 and 24 and their respective dependents are believed to distinguish patentably from the applied references. Claim 38, which was amended slightly as noted above, remains in condition for allowance.

Accordingly, this application is believed to be in condition for allowance. A prompt Notice of Allowance is respectfully requested.

The Commissioner is hereby authorized to charge to Deposit Account No. 50-1165 (T2211-11786US01) any fees under 37 C.F.R. §§ 1.16 and 1.17 that may be required by this paper and to credit any overpayment to that Account. If any extension of time is required in connection with the filing of this paper and has not been separately requested, such extension is hereby requested.

Respectfully submitted,

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